

**REMARKS**

Claims 1, 4-8, 10, 11, 13, 20-25, 27, 28, and 33-36 are present in this application. Claims 1, 24 and 36 are independent claims.

Claim 36 has been added. Claims 2, 3 and 32 are cancelled.

Claims 20-23 have been withdrawn.

**Allowable Subject Matter**

Applicants thank the Examiner for indicating that claims 5-8, 11, 13, 27, and 34 would be allowable if rewritten into independent form.

**§ 103(a) Rejection – Huang, Lu**

Claims 1-4, 10, 24, 28, 33, and 35 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Application Publication 2002/0105795 (Huang; newly cited) in view of U.S. Application Publication 2003/0117794 (Lu). Applicants have amended claim 1 to incorporate features of claims 2 and 3, as well as claim 32. Claim 24 has been amended. Applicants traverse this rejection based on the claims as amended.

**Claim 1**

Embodiments of the present invention covered by claim 1 are directed to an electronic equipment (e.g., Figs. 1, 4A, 4B; electronic equipment as in para. 0002) comprising:

at least one light source (e.g. LED 102), in which light of the light source is guided and emitted from an operation member having translucent properties (e.g. operation key; operational portion cover 420) via an optical waveguide (e.g. optical waveguide 103); and

a region that contains phosphor (e.g. phosphor 104), which is separate from the light source, for emitting visible light by being excited by the light from the light source, said region that contains phosphor is in a path through which the light of the light source is guided,

wherein said at least one light source is detachable from the region that contains phosphor (Fig. 4B; specification at para. 0081),

wherein the operation member is constituted by a plurality of keytops (e.g. keys 421, 422, 423, 424a-424d),

wherein the region that contains phosphor is a portion surrounding the light source contained in a vicinity of the light source (Fig. 1, portion 104; para. 0060).

The Office Action alleges that Huang teaches the claimed  
at least one light source (LEDs 131);  
operation member (cap 111); and  
optical waveguide (light guide 14).

The Office Action admits that Huang does not disclose a region that contains phosphor in the light guide, which is separated from the light source. Instead, the Office Action relies on Lu for making up for this deficiency. Applicants disagree.

**Applicants submit that Lu does not teach or suggest a region that contains phosphor in the light guide.**

The Office Action refers to color shift medium 311 of Lu as being a light guide containing phosphor in a path through which the light of the light source 310 is guided.

Applicants submit that Lu discloses a color shift medium that does not require an optical waveguide. In particular, Lu states that,

“Incandescent light, halogen light and fluorescent light may be utilized as back lights in conventional LCD industries, but these backlights, which are cylindrical structures, cannot illuminate uniformly. Therefore, additional light guide, reflecting plate, diffusion plate, and prism are required to increase the uniformity of light. However, the stacking of additional elements in LCD increased the thickness, decreased the emitting efficiency, and inflated the cost.” (para. 0006).

In other words, Lu considers a light guide as being an additional element that increases the thickness, decreases the emitting efficiency, and inflates the cost.

Alternatively, Lu discloses a light emitting diode utilized as a flat light source. (para. 0007)

The invention disclosed in Lu provides a flat color-shift medium having an objective of simplifying structure so as to reduce manufacturing cost and to be easily applied on the backlight directly, in order to, among other things, produce lighter and thinner products (para. 0014).

In other words, Lu discloses an invention that does not require a light guide and includes a flat color-shift medium applied directly to a flat backlight.

The Office Action alleges that the LEDs (131) and light guide (14) of Huang teaches the claimed the at least one light source is detachable from the region that contains phosphor (fig. 2). To the contrary, as admitted later in the Office Action, Huang does not disclose a region that contains phosphor.

Further, the Office Action concludes that it would have been obvious to modify Huang (erroneously stated as Pasco) with the teaching of Lu “to provide phosphor in a path through which light of the light source 310 is guided in order to produce high brightness uniform desired spectrum white light.” (at page 3 of the Office Action).

In other words, the Office Action alleges that Huang’s LEDs teach the claimed light source, but that the modification taught by Lu would result in high brightness uniform desired spectrum white light. Applicants submit that the alleged combination contradicts the explicit teachings in Lu.

Applicants submit that Huang and Lu cannot be combined in the manner alleged in the Office Action. Huang teaches a specific arrangement of LEDs 131 and light guide that achieves uniform spread of light using reflective points (paragraph 0024). Lu, on the other hand has a “brightness” objective for a display device, and discloses a structure in which a flat color-shift medium 311 is formed directly on a flat backlight 310 by, for example, a wet coating process (para. 0023). As noted above, Lu specifically discloses that conventional LCDs having a light guide results in increased thickness, decreased emitting efficiency, and inflated cost. Thus, where Huang teaches LEDs provided as a light source 131 to a light guide 14, Lu teaches a color-shift medium formed directly on a flat backlight, without a light guide.

In other words, Applicants submit that Lu’s color shift medium is not disclosed as producing high brightness uniform spectrum white light in the case of using a plurality of LEDs as in Huang. Rather Huang requires a specific arrangement of a light guide 14 having reflective points proportional to the distance from the light source in order to uniformly spread the light from the LEDs.

Furthermore, Applicants submit that Lu's color shift medium provided light from LEDs as taught in Huang would have unpredictable results, and would most likely no longer achieve high uniform brightness (i.e., would result in a change in the principle of operation of the reference (see MPEP 2143.02(VI))).

In any case, Applicants submit that Huang in combination with Lu would not teach or suggest the claimed feature that the region that contains phosphor is in a portion surrounding the light source (see Fig. 1, phosphor portion 104).

Pasco, which was relied on in the case of claim 32, does not disclose phosphor, and thus fails to teach the claimed region that contains phosphor in a portion surrounding the light source.

At least for these reasons, Applicants submit that Huang and Lu, either alone or in combination, fail to teach each and every claimed feature of claim 1 and respective dependent claims. Applicants request that the rejection of claim 1 be reconsidered and withdrawn.

#### Claim 24

Embodiments of the present invention covered by claim 24 are directed to an electronic equipment (e.g. mobile phone 500; backlight structure shown in Figs. 5A, 5B) comprising:

- a backlight (e.g. LEDs 502) which transmits light through an operation member (e.g. keypads 503) and is emitted, and

- a wavelength-converting phosphor paint (e.g. wavelength-converting phosphor 504), which is separate from the backlight, emits light by being excited by the light of the backlight, wherein the backlight is detachable from the wavelength-converting phosphor paint, wherein the wavelength-converting phosphor paint is on the back face of the operation member, opposing the backlight (e.g., the wavelength-converting phosphor 504 in the keypad 503 is applied on the back face opposing the blue violet chip LED 502; specification at para. 0091).

The Office Action alleges that Huang discloses a backlight keyboard and that Huang teaches at least one light source 131 that is detachable from a light guide 14.

Huang discloses a keyboard in which a light guide 14 is disposed under the plurality of keys 11 for guiding and uniformly spreading the light transmitted from the light source 13 (para.

0021). As shown in Fig. 2, the light source 13 includes one or more LEDs 131. The light guide 14 consists of many reflective points for vertically reflecting the light which is horizontally transmitted from the LEDs 131 (para. 0024).

Thus, Applicants submit that the “backlight” of the backlight keyboard refers to light guide that reflects light vertically that is transmitted horizontally from the LEDs 131.

Claim 24 requires a backlight that is detachable from wavelength-converting phosphor paint.

Although it is alleged that the LEDs 131 can be detached from the light guide 14 of Huang, Applicants submit that Huang fails to teach or suggest the light guide 14 (which together with the LEDs 131 constitute a backlight) being detachable from the keys 11.

Furthermore, claim 24 requires the wavelength-converting phosphor paint on the back face of the operation member, opposing the backlight.

Lu, which is relied on for teaching a wavelength-converting phosphor paint, fails to teach its color shift medium 311 on the back face of a key, and being detachable from the backlight 310.

At least for these reasons, Applicants submit that Huang and Lu, either alone or in combination, fail to teach each and every claimed feature of claim 24 and respective dependent claims. Applicants request that the rejection of claim 24 be reconsidered and withdrawn.

#### Claims 10 and 28

With regard to claims 10 and 28, the Office Action merely alleges, without support, that it would have been obvious to one of ordinary skill in the art that the claimed electronic equipment could be a mobile phone. In addition, the Examiner states that claims 10 and 28 are written in “product by process” claim language.

Claim 10 recites “The electronic equipment according to claim 1, wherein the electronic equipment is a mobile phone.” Claim 28 recites a similar feature.

Applicants submit that the claimed “wherein the electronic equipment is a mobile phone,” does not recite a process step.

Applicants request that the rejection of claims 10 and 28 be reconsidered as not being directed to process steps.

**§ 103(a) Rejection – Huang, Lu, Sze**

Claim 25 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Huang and Lu, and further in view of Sze (“Physics of Semiconductor Devices”). Applicants traverse this rejection.

The Office Action states that a reason for combining Lu and Huang is to obtain high brightness white light. Applicants submit that the teachings of Sze of obtaining a blue light would appear to contradict the reason for combining Lu and Huang.

In any case, Applicants submit that Sze fails to make up for the above stated deficiencies. Accordingly, at least for the reasons above for claim 24, claim 25 is patentable as well. Applicants request that the rejection be reconsidered and withdrawn.

**§ 103(a) Rejection – Huang, Lu, Pasco**

Claim 32 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Huang and Lu, and further in view of U.S. Patent 5,803,240 (Pasco). Applicants have canceled claim 32, such that the rejection no longer applies.

**New Claim**

Claim 36 has been added. Claim 36 is directed to embodiments having a feature that the region that contains phosphor is contained immediately below the upper surface of the keytops, and is supported by the specification at para. 0067 and Fig. 2. Applicants submit that the prior art of record fails to teach each and every feature recited in new claim 36.

**CONCLUSION**

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact **Robert Downs** Reg. No. 48,222 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.147; particularly, extension of time fees.

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Respectfully submitted,

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